Abstracts

An efficient CAD-oriented large-signal MOSFET model

A.V. Grebennikov and Fujiang Lin. "An efficient CAD-oriented large-signal MOSFET model." 2000 Transactions on Microwave Theory and Techniques 48.10 (Oct. 2000 [T-MTT]): 1732-1742.

An efficient computer-aided-design-oriented large-signal microwave model for silicon MOSFETs is presented based on the well-founded small-signal equivalent circuit including self-heating effect and charge conservation condition. The proposed new single continuously differentiable empirical equations for drain current and gate capacitance are simple and quite accurate. The model parameters in the equations are constructed in such a way that they can be easily and straightforwardly extracted from measured data. The temperature effect is predicted by simply adopting the linear temperature-dependent model parameters for threshold voltage, saturation current, capacitance, and series resistances. The presented model is a good compromise between the simplicity of numerical calculations and the accuracy of final results that is desired by circuit designers in nonlinear circuit simulation.

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